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AGILENT TECHNOLOGIES, INC.
INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT.
P.O. BOX 7599
M/S DL429
LOVELAND, CO 80537-0599

EXAMINER

TANG, KENNETH

| ART UNIT | PAPER NUMBER |
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2127

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,511

Applicant(s)

VAJJHALA ET AL.

Examiner

Kenneth Tang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/17/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/30/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-35 are presented for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-30, 33, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- a. The following lacks antecedent basis:

- i. Claims 1 (line 4), 16, and 35 - "the resource consumers ";
- ii. Claim 12 (line 2) and 27 - "the resource allocation table index pointer";
- iii. Claim 28 (line 1) - "the second allocation entry".

- b. The following is indefinite:

- iv. In claims 1, 16, and 35, "receiving a ranking vector", "generating a pending request vector", and "selecting a selected resource consumer" is indefinite because it is not made explicitly clear in the claim language whether the interconnect device, the resource consumer or something else is performing these functions.
- v. In claims 1, 16, and 35, " resource consumer" is indefinite because it is not made explicitly clear in the claim language whether this refers to the interconnect device or to something different.

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vi. In claim 28, it is unclear whether it is dependent on claim 17 or intended to be dependent on claim 27.

vii. In claim 33, "VHDL" is indefinite because it is not defined in the claim language what this acronym stands for. The full name of this acronym needs to be given in the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Angle et al. (hereinafter Angle) (US 6,661,788 B2) in view of Rodcheffer et al. (hereinafter Rodcheffer) (US 6,614,764 B1).

4. As to claim 1, Angle teaches a method to allocate resource capacity within an interconnect device in accordance with a resource allocation table, the resource allocation table including a plurality of allocation entries indicating an allocation of the resource capacity to a plurality of the resource consumers (*col. 7, lines 52-65*), the method including:

retrieving a ranking (vectors and the associated priorities) vector corresponding to a first allocation entry within the allocation table (*col. 10, lines 34-43*);

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generating a pending request vector indicating for which of the plurality of resource consumers a resource request is pending (*Abstract and col. 2, lines 18-38*); and

selecting a selected resource consumer to consume at least a portion of the resource capacity, the selection being performed utilizing the ranking vector and the pending request vector (*col. 10, lines 18-33*), wherein the ranking vector is derived from the resource allocation table.

5. Angle fails to explicitly teach the list being ordered in accordance with an order of appearance. However, Rodcheffer teaches listing in a data table by the order of their appearing connections of resource consumers (*col. 44, lines 48-58*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of the list being ordered in accordance with an order of appearance to the existing table in the network resource allocation system of Angle because ordering increases the control of the system by having weights and priorities in addition to more effectively managing the network allocation (*col. 44, lines 45-58 and col. 5 lines 1-7*).

6. As to claim 2, Rodcheffer teaches wherein the order of appearance is determined in a first direction within the resource allocation table from the first allocation entry (*col. 44, lines 48-58*).

7. As to claim 3, Angle teaches wherein the selection of the selected resource consumer is performed combinatorially (logic) utilizing the ranking vector and the pending request vector (*col. 10, lines 8-17*).

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8. As to claim 4, Angle teaches wherein the plurality of resource consumers comprise a plurality of data streams supported within the interconnect device, and wherein the resource capacity comprises bandwidth on a physical link shared by the plurality of data streams within the interconnect device (network device) (*col. 19, lines 43-45 and Abstract*).

9. As to claim 5, Angle teaches wherein the ranking vector is retrieved from a ranking table, the ranking table comprising a plurality of ranking vectors, each of which corresponds to an entry within the resource allocation table (*col. 25, lines 53-65*).

10. As to claim 6, Angle teaches wherein the retrieval of the ranking vector includes utilizing a resource allocation table index pointer, identifying the first allocation entry within the resource allocation table, to retrieve the ranking vector from the ranking table (*col. 25, lines 53-65 and col. 12, lines 18-26*).

11. As to claim 7, Angle teaches wherein a second allocation entry within the resource allocation table records the allocation of none of the resource capacity to a second resource consumer, and wherein the second allocation entry is excluded from consideration as a first entry for the second resource consumer within the resource allocation table (*col. 20, lines 1-13, col. 7, lines 49-65*).

12. As to claim 8, Angle teaches multiple allocation entries for a first resource consumer of the plurality of resource consumers (*col. 25, lines 53-65*).

13. As to claim 9, Angle teaches wherein the selection of the selected resource consumer is performed utilizing combinational logic that selects a highest order resource consumer, within the ranking (priority) vector and for which a request is pending, as the selected resource consumer (*col. 11, lines 45-54, col. 16, lines 11-14*).

14. As to claim 10, Angle teaches wherein the selection of the selected resource consumer performed utilizing the combinational logic is performed in one clock cycle (one cell cycle) (*col. 1, line 58*).

15. As to claim 11, Angle teaches wherein the generation of the pending request vector includes examining a respective request queue associated with each of the plurality of resource consumers to determine whether the respective request queue includes a resource request associated with the respective resource consumer (*col. 2, lines 18-38*).

16. As to claim 12, Angle teaches wherein a second allocation entry within the resource allocation table records the allocation of none of the resource capacity to a second resource consumer, and wherein the second allocation entry is excluded from consideration as a first entry for the second resource consumer within the resource allocation table (*col. 12, lines 18-20*).

17. As to claim 13, Angle teaches wherein the second allocation entry corresponds to the selected resource consumer if the resource capacity allocated to the selected resource consumer

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is not consumed by at least one resource request associated with the selected resource consumer
(*col. 8, lines 40-53*).

18. As to claim 14, Angle teaches wherein the second allocation entry corresponds to a further resource consumer, downstream of the selected resource consumer within the resource allocation table, if the resource capacity allocated to the selected resource consumer is consumed by at least one resource request associated with the selected resource consumer (*col. 8, lines 40-53*).

19. As to claim 15, Angle teaches wherein the updating of the resource allocation table index pointer includes retrieving a first resource allocation table bit vector associated with the selected resource consumer, the first resource allocation table bit vector including a bit entry corresponding to each allocation entry within the resource allocation table, at least one of the bit entries being set to flag at least one allocation entry for the selected resource consumer within the resource allocation table (*col. 12, lines 18-42*).

20. As to claims 16-17, they are rejected for the same reasons as stated in the rejection of claims 1-2, respectively.

21. As to claim 18, it is rejected for the same reasons as stated in the rejection of claim 9.

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22. As to claims 19-25, they are rejected for the same reasons as stated in the rejection of claims 4-10, respectively.

23. As to claims 26-30, they are rejected for the same reasons as stated in the rejection of claims 11-13 and 15 above.

24. As to claim 31, it is rejected for the same reasons as stated in the rejection of claim 16. In addition, there is a memory located in the computer.

25. As to claim 35, it is rejected for the same reasons as stated in the rejection of claim 31.

26. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Angle et al. (hereinafter Angle) (US 6,661,788 B2) in view of Rodcheffer et al. (hereinafter Rodcheffer) (US 6,614,764 B1), and further in view of Greene (US 6,631,419 B1).

27. As to claim 32, Angle and Rodcheffer fails to explicitly teach wherein the description comprises a behavioral level description of the circuit. However, Greene teaches methods optimized for implementation in hardware, wherein implemented by a hardware design language (*col. 19, lines 52-59*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of the hardware design language to the existing

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system of Angle and Rodcheffer because it would provide methods optimized for implementation into hardware (*col. 19, lines 52-59*).

28. As to claim 33, Greene teaches wherein the behavioral level description is compatible with a VHDL format (*col. 19, lines 51-59*).

29. As to claim 34, Greene teaches wherein the behavioral level description is compatible with a Verilog format (*col. 19, lines 51-59*).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MENG-L T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100